

29.

The Barrio
Comprehensive Child Health Care Center
November 1972 - June 1975
San Antonio, Texas

Final Evaluation Report

Fred Fiedler, Ph.D.
Harold Dickson, Ph.D.

November 1, 1975

Health Services Research Institute
The University of Texas Health Science Center
San Antonio, Texas

[EPSDT - Title XIX, Social Security Act,
As Amended, Section 1905 (a) (4) (B)]
Prepared under a grant award by
The Social and Rehabilitation Service, DHEW

Information
Resource
Center

REPORTS

RJ
102
.5
T4
F53
1975

EPSDT 6.36

RJ
102.5
.T4
F53
1975

THE BARRIO COMPREHENSIVE CHILD HEALTH CARE CENTER
FINAL EVALUATION REPORT

Fred Fiedler, Ph.D.
Harold Dickson, Ph.D.

Health Services Research Institute
The University of Texas Health Science Center
San Antonio, Texas

November 1, 1975

TABLE OF CONTENTS

SUMMARY AND CONCLUSIONS	i
Chapter	
I. INTRODUCTION AND DESCRIPTION OF THE PROJECT	1
Project Background.	1
Project Goals and Objectives.	4
The Evaluation Approach	4
II. EPSDT SUBSYSTEMS.	6
Case Finding.	6
Screening	10
Diagnosis and Treatment	15
Case Monitoring	19
III. SCREENING FINDINGS.	22
Rates of Findings	22
Characteristics of Screening Detected Problems.	28
Comparison of Rates for AFDC and Non-AFDC Recipients.	33
Comparison of Rates on Original and Periodic Screens.	33
IV. COSTS	36
Cost Allocation Methodology	36
Data Characteristics.	38
Projection of Costs to a Maximally Functioning System	40
Time of Administration and Cost of Materials for Screening Procedures.	41
V. ATTAINMENT OF PROJECT OBJECTIVES.	43
Original Project Objectives	43
Final Year Objectives	47
Conclusion.	52

VI. CONCLUSIONS AND RECOMMENDATIONS	53
Recommendations to the Barrio Clinic.	54
Implications for National Policy.	54

Appendix

A. SCREENING PROCEDURES, TESTS AND ABNORMAL VALUES AT THE BARRIO CLINIC.	56
B. PROBLEM CATEGORIES AND DEFINITIONS.	57
C. LISTING OF SOME OF THE PROBLEMS ON FILE AT THE BARRIO CLINIC. . .	60
D. CASE HISTORY.	65

SUMMARY AND CONCLUSIONS

This is a summary of the major accomplishments, significant findings, and conclusions from the final report of the Barrio Comprehensive Child Health Care Center in San Antonio, Texas covering the period of the project's activity from November, 1972 through June, 1975.

Accomplishments

The project screened over 6,000 children in a Mexican-American poverty area in the City of San Antonio, Texas.

These 6,000 children represent 37% of the eligible children in the clinic's 10 census tract catchment area.

Effective methods of case finding (eligible population penetration as measured by "shows" for screen) were developed.

Two-thirds of the children screened were found to have health problems (medical and dental).

Diagnosis and treatment were performed at the clinic for 81% of the problems found. The other problems were referred to other practitioners or clinics.

Sound and transferable systems of record keeping and data processing were developed.

Accurate and transferable EPSDT cost data were obtained from the project.

The development of systems of procedures and methods useful for case monitoring was undertaken.

Deficiencies were identified and possible solutions to community immunization inadequacies were developed.

Insights into developmental problems of children of foreign born parents were achieved and improved concepts of detection and treatment began to emerge.

Findings

Personal contact between community aides and clients allows the community aides to alleviate clients' fears regarding screening and to convince clients of the worth of "well child" checkups.

The provision of transportation is a necessary component of the clinic's outreach program. Over half of the clients indicate that it would be "extremely difficult" to get to the clinic without clinic provided transportation.

The availability of on-site treatment for screening detected problems and sick children appears to provide much of the clients' motivation to use the clinic.

Dental caries, nutritional, infective-parasitic, and ear and hearing problems occur most frequently.

Screening finds a significant number of relatively serious problems which have not received care under traditional programs. Only 4% of the problems were previously under care and 25% of the problems were rated as moderate or severe.

Rates of findings varied little between AFDC recipients and non-recipients.

Rates of findings varied substantially across the physicians performing the screening physical examination and personnel of different skill levels performing the various screening procedures.

Only one-third of the children with immunization records were fully immunized before receiving immunizations at screening. Children without immunization records can be expected to have even lower immunization levels.

Only 21% of the problems detected by screening are known to be corrected. Case monitoring is an activity which received low priority even in this project which emphasizes comprehensive health care.

Costs of services per child screened at the Barrio Clinic as operating at present and projected costs of operating under a program placing more emphasis on case monitoring are shown below:

<u>Activity</u>	<u>Present</u>	<u>Expanded Case Monitoring</u>
Case Finding	\$10.55	\$10.55
Screening	17.30	17.30
On-site Diagnosis & Treatment*	10.56	22.15
Referred Diagnosis & Treatment**	10.00	13.00
Case Monitoring	4.84	10.55
Subtotal	<u>\$53.25</u>	<u>\$73.55</u>
Developmental***	9.57	9.57
Sick Treatment	12.96	12.96
Total	<u>\$75.78</u>	<u>\$96.08</u>

* Medical and dental only.

** Estimates--medical and dental only.

*** Diagnosis and treatment only. Case finding and screening included in above costs.

These costs should be increased by 10-15% to be considered generally applicable to other programs. The cost of living in San Antonio, the clinic's use of volunteers, low fees to physicians, and other considerations detailed in the text all served to decrease costs incurred by the Barrio Clinic.

Conclusions

Effective EPSDT outreach for this population depends on face-to-face contact with outreach workers, the provision of transportation, and the mix of services provided.

EPSDT programs must describe or conform to standards affecting the rates of findings in order to reduce variation in rates and to ensure comparability between programs. The costs of false positives and negatives are significant and can be minimized by the establishment of proper standards.

A system for providing and recording immunizations must be developed in order to bring immunizations to adequate levels.

EPSDT services should be provided to all poverty level children regardless of Medicaid eligibility or enrollment.

Case monitoring must be supported by the development of effective methods and by adequate financing to ensure resolution of screening detected problems.

Expenditures in the range of \$100 per child screened represent minimum expenditures for an adequate EPSDT program.

The project has both documented the need for and provided many needed health services to its target population. Nevertheless, EPSDT as currently operating is much different than the model provided by the Barrio Clinic. The clinic incorporates functions normally performed separately by health and welfare departments in conjunction with a variety of private providers.

If many clinics of the type modeled by the Barrio Clinic were to be established as an alternative or supplement to the EPSDT program, administrative and reporting regulations would undoubtedly reduce the spontaneity which has characterized the clinic. There are no guarantees that clinics operating under these constraints would provide a national health care system which is more effective than that presently being implemented. Yet, projects of this type may be invaluable in providing services required by populations which are culturally or socially inaccessible to traditional programs.

CHAPTER I

INTRODUCTION AND DESCRIPTION OF THE PROJECT

This report is a description and evaluation of the Barrio Comprehensive Child Health Care Center (Barrio Clinic). The Barrio Clinic was the first demonstration project sponsored by the Social and Rehabilitation Service (SRS) for the purpose of testing various approaches to the delivery of Early and Periodic Screening, Diagnosis and Treatment (EPSDT) services. This introductory chapter describes the Barrio Clinic, its organization, sponsorship and objectives, and the approach taken by the Health Services Research Institute (HSRI) in evaluating the project.

Chapter II will describe the clinic's operation and will present outcomes in the case finding, screening, diagnosis and treatment, and case monitoring subsystems. Chapter III examines the screening findings in some detail and reports differences observed in welfare recipients (AFDC) and non-recipients (non-AFDC) and in original and periodic screens. Chapter IV shows the costs incurred by the program and extrapolates these costs to a more fully functioning program. Chapter V relates the findings presented in earlier chapters to the attainment of the project's stated objectives. The final chapter contains conclusions and recommendations relevant to national policy and the clinic's operation.

Project Background

There are, in every major city, neighborhood groups and health personnel who are vitally interested in personal preventive health services, but who are pressed for funds and therefore conducting crisis care only. In 1970 and

1971 one such group, composed of members of the Commission for Mexican-American Affairs (an agency of the Catholic archdiocese of San Antonio) and other interested persons, was active in seeking funding for a childrens' clinic in the west side of San Antonio. A diphtheria epidemic which resulted in 200 hospitalizations and four deaths, with cases concentrated on the west side, lent urgency to their search. The group had been successful in establishing a part-time clinic in a community center with a small grant from the Office of Economic Opportunity. The funding of the EPSDT demonstration in the barrio resulted from an inquiry by the Commission to SRS regarding possible financial support for a full-time clinic. The project was funded in July, 1972, and by November a staff had been assembled, a records system established, and screening begun.

Community support was furthered through the establishment of an advisory board of representatives of the health and social services agencies serving the Mexican-American community.

The medical director, Dr. Fernando Guerra, was instrumental in gaining medical society approval and recruiting private physicians from the community to participate.

At first, sick children were treated in another clinic (Good Samaritan), but it soon became clear (due to transportation and coordination problems) that the screening and treatment needed to be in the same building. In April of 1973, a lease was negotiated to locate in an abandoned church. The one story brick church was renovated and now contains three examining rooms, a large waiting area and office space. There is ample parking space.

The Barrio. The clinic serves a neighborhood on the west side of San Antonio, a city of some 800,000 inhabitants.

In the 10 census tracts which more or less define the clinic's catchment area, some 93% of the population has Spanish surnames. The 1970 census reports median family incomes in these tracts ranging from \$2,482 to \$6,339, and median years of education for persons aged 25 years or older ranging from 4.3 years to 7.3 years. Children under 14 years of age account for 35% of the estimated 93,000 persons in the ten tracts.

Current staffing and operation. The full-time administrative director is a registered pediatric nurse. The medical director is a pediatrician who performs this function on a part-time basis. The full-time medical staff of 15 persons includes two registered nurses, one pediatric nurse practitioner, two licensed vocational nurses, six outreach workers, and four others (secretaries, bus driver, records technician). Six part-time persons work in a clinic program treating developmental problems. Six part-time physicians and a dentist conduct physical and dental examinations and provide treatment for children with minor acute conditions. The physicians are paid a fee of \$4 per child examined or treated.

The clinic operates five days per week and holds one evening clinic per week. Approximately 25% of the personnel time at the clinic is directly related to diagnosis and treatment. Treatment is supported by case finding, screening and case monitoring which together account for the remaining 75% of personnel time.

Current funding. Since June of 1975, the clinic has been operating on a three year grant from the Robert Wood Johnson Foundation. It has also received a grant from the Hogg Foundation for Mental Health to provide matching support for its remedial program for children with developmental, language and learning problems.

Project Goals and Objectives

The objectives of the Barrio Clinic as stated in the original 1972 proposal to SRS were summarized as follows:

1. To establish a child health care program at two neighborhood centers (one in a heavily Mexican-American area, one in a Black area), where qualified pediatricians and dentists will hold regular office hours. Participating physicians and dentists will be reimbursed on a fee-for-service basis. (There were not enough funds for the Black area.);
2. To provide a staff training program in which community residents will receive training in community outreach techniques, nutrition and consumer education, diagnosis of family needs in order to make referrals and maintain linkages with appropriate social and public service agencies, etc;
3. To undertake a community outreach program in which the community outreach workers will communicate with families within the catchment area to assure that all eligible children are being reached for early screening, diagnosis and treatment and that families are being provided health education. A rented station wagon will be used to transport staff and clients for follow-up screening and treatment;
4. To develop a uniform record-keeping system, which will serve as the core of a centralized, longitudinal effort to keep track of Barrio children, their health and family circumstances, and the adequacy with which their needs are being met;
5. To utilize the record-keeping system to obtain baseline data for evaluation of the project and analysis of its cost-effectiveness in meeting the health needs of the population served. It is expected that if the project continues for several years, vital information will be gathered regarding the value of preventive medicine in improving both the physical and mental health of the clients served. If data can be collected for a decade or more, the effect of preventive medicine and health education on economic patterns and educational attainment can also be researched;
6. To utilize the project as a model for replication [in whole or in part] in other communities as the Social Security Act requirement takes effect that early screening, diagnosis and treatment programs be implemented for Medicaid eligible children throughout the nation.

The Evaluation Approach

The original proposal called for HSRI to do the following:

1. To help define the project's objectives in measurable terms.
2. To design (provide) a data collection system useful for evaluation and managerial purposes.
3. To monitor the data collection during the operational life of the project.
4. To provide analyses at relevant intervals with respect to screening findings and costs.

The general intent was to provide an information (data) system which would capture and provide rapid retrieval of information for management and cost analyses and for assessment of performance in terms of number of children screened, number and types of conditions found, follow-up, and so on. The outputs derived from the four functions are simultaneously evaluative and managerial.

This approach, although it includes a managerial element by feedback to program administration, may be classified under the rubric goal-attainment model which focuses upon the measurement of how well an organization's objectives are being achieved.

An interim evaluation report, published in January, 1974¹, described both clinic activities and outcomes of the first 14 months of the clinic's operation. In April of 1974, the clinic records system and the HSRI data system reflecting the clinic's records were modified extensively. The modification was designed to take into account changes indicated by the interim evaluation and to make the information reported by the project conformable to that reported by three other projects comprising a "common data base" for the evaluation of the four EPSDT demonstration projects.

¹ The Barrio Comprehensive Child Health Care Center--Evaluation Report. Health Services Research Institute. The University of Texas Health Science Center, San Antonio, Texas. January, 1974.

CHAPTER II

EPSDT SUBSYSTEMS

EPSDT may be conceptualized as four subsystems: case finding, screening, diagnosis and treatment, and case monitoring. The four sections in this chapter define the subsystems and document the services provided by the clinic in each of these subsystems during the period November, 1972 through March, 1975.

Case Finding

Definition. The case finding subsystem searches out eligible individuals, explains the Barrio Clinic EPSDT program to them, encourages them to take advantage of the clinic's services, and provides transportation, if necessary, from and to the home and clinic.

Overview. Case finding at the Barrio Clinic is done by six "community aides" who are residents of the area served by the clinic. The women serving as community aides are bilingual and have received nurses aid or similar health training. The community aides make unannounced calls at the homes in a 10 census tract catchment area. When they find a family with eligible children, they explain the clinic services and the value of the screening program to mothers. The aides also serve an advocacy function in that they refer families to appropriate social agencies when a need for referral is evident. Aides take medical histories and administer the Denver Developmental Test in the homes when the families make an appointment for screening. Transportation to the clinic is arranged by the aides and provided by the clinic when necessary. Since it has been found at the clinic that the aides require close supervision, they check in before work, at noon, and at closing time.

Periodic meetings are held in which the aides report and discuss problems or work through sample cases with their supervisor (a registered nurse). Each aide is expected to contact enough families to produce at least three "shows for screen" per day.

The clinic has not developed a plan to systematically cover the catchment area and there is no documentation of areas or streets where case finding has been attempted.

Eligible population. Children eligible for services at the Barrio Clinic are those whose families earn income below the poverty level, who live in a 10 census tract² area, and are 12 years old or less (the clinic, however, does serve children older than 12 when they are members of a family whose younger members are enrolled). Since the clinic was developed as a demonstration, its services are available to all children meeting the above criteria regardless of their eligibility for Medicaid services.

Computations on the 1970 census data indicate that there are about 15,000 children meeting the above criteria. These children may be taken as the clinic's target population.

Case-finding outcomes. Records kept by the community aides show that aides make contact with a family on 79% of attempted contacts. Of the families contacted, 72% make an appointment to bring one or more children for screening and 60% of these families show for their initial screening appointment. Thus, 34% of attempts to contact families result in a show for screen.

Show rates for individual aides (number of families showing for appointment divided by number of families appointed) vary considerably ranging from

² 1970 San Antonio Census Tracts 1105, 1106, 1601, 1605, 1606, 1701, 1702, 1703, 1704, 1709.

28% to 91%. Variables associated with these show rates have not been specified.

The clinic reports 5,519 children screened between November, 1972 and the end of March, 1975. The penetration rate (percent of the 15,000 eligible children screened) is therefore 37%.

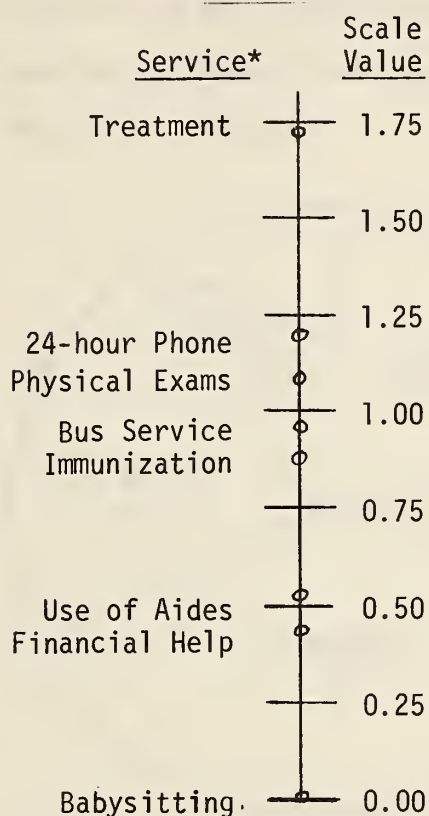
Relative popularity of clinic services. An important factor in clinic use is the mix of services offered. In a survey of 247 randomly selected mothers enrolled at the clinic, the mothers were asked to rank order eight of the clinic services according to their importance to them. A Thurstone Scale³ (see Figure 2.1) derived from the responses shows that treatment for sick children is considered to be the most important service the clinic provides. The help provided by the 24-hour telephone answering service (handling sickness and emergency problems) is ranked second and is closely followed by physical examinations (screening). Since treatment for sick children is available only to enrolled (screened) children, there is an implication (which is supported by the impressions of the community aides) that the availability of treatment for problems found in screening and a sick clinic is an aid in the Barrio Clinic's outreach effort. This line of reasoning suggests that some portion of the clinic's costs in treating the sick could be appropriately construed as outreach costs.

Briefly, although 81% of the clients report first going to the clinic for screening or immunizations, they appear to be motivated primarily by a desire to establish their eligibility to use the clinic's treatment services.

Transportation. Fifty-four percent of the families enrolled at the clinic report that it would be "extremely difficult" to get to and from the clinic

³ Thurstone, L. L., The Measurement of Values, Chicago: The University of Chicago Press, 1959.

FIGURE 2.1. Ranked importance of services provided by the Barrio Clinic,
Thurstone Scale



* The items (original wording) were presented to respondents as follows (underlining is for reference to the figure):

As a mother using the Barrio Clinic, which of these services is most important to you? (Asked to rank all services).

The Barrio Clinic provides treatment for sick children.

You can telephone the Barrio Clinic answering service at night and on weekends for help.

Financial assistance to families is given by the Barrio Clinic.

It is possible to have your child immunized any day of the week at the Barrio Clinic if needed.

The Barrio Clinic provides babysitting services at the clinic.

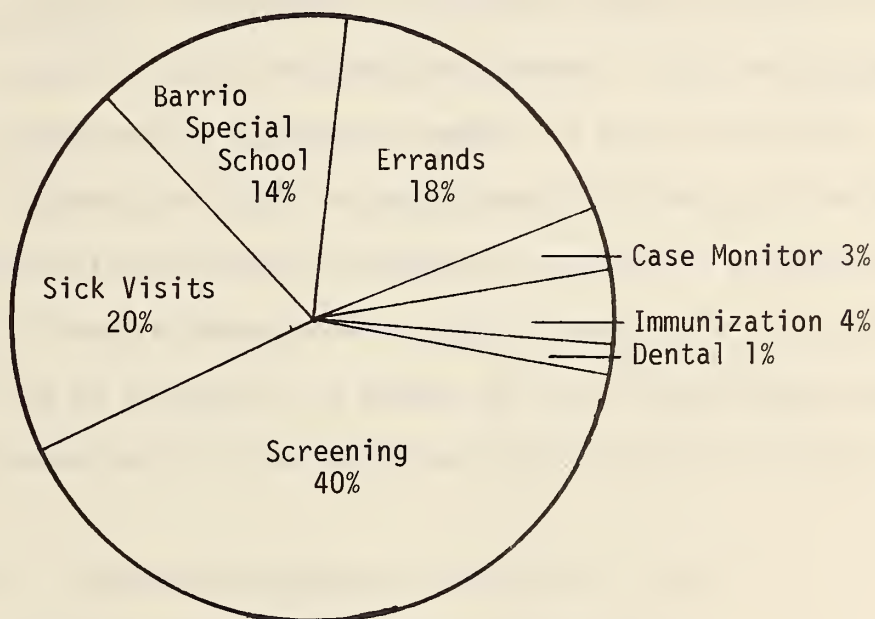
The Barrio Clinic sends aides out to homes to tell people about the clinic.

The Barrio Clinic has a clinic bus to take patients to the clinic.

The Barrio Clinic does physical examinations for "well" children.

without clinic provided transportation.

The clinic employs a full-time driver to provide rides for screening, sick visits, immunizations, and the Barrio Special School⁴, to run errands, and to do some case monitoring⁵ work. The chart below shows the proportion of driving time spent for various purposes.



The drivers log for the period October 1 to December 31, 1974, shows that the driver made an average of 7.67 trips a day from the clinic, spending an average of four hours a day on the road. She transported an average of 24 children a day on one-way trips (a child transported to the clinic and back was counted as two children given a one-way trip).

Screening

This section is an overview of the screening activity at the Barrio Clinic.

⁴ Described on page 18 and following.

⁵ Described on page 19 and following.

Chapter III will present more detail on screening findings and the characteristics of problems found in screening.

Definition. Screening is the performance of a health evaluation, through observation and tests, to determine those individuals with conditions in need of more definitive study.

The screening process. The elements or procedures comprising the Barrio Clinic screen (see Table 2.1) fall into two broad groups: a set of measurements and lab procedures (performed by appropriate members of the clinic staff--registered nurses, licensed vocational nurses, community aides, or volunteers) and an unclothed physical examination (performed by a physician or pediatric nurse practitioner). The lab procedures and physical examination are usually done on the same visit to the clinic. A screen for lead in the blood, mandated by the EPSDT guidelines⁶, is not performed at the Barrio Clinic but

TABLE 2.1. Screening procedures at the Barrio Clinic

<u>Lab and Measurements*</u>	<u>Physical Examination</u>
Measurements	Head and Neck
Hematocrit	Ears, Nose and Throat
Differential	Chest
Urinalysis	Cardiac
Tuberculosis	Abdomen
Hearing	Genitalia
Vision	Extremities
Developmental	Skin
	Neurological
	Eyes
	Dental

* Abnormal values for these procedures are given in Appendix A.

⁶ Early and Periodic Screening, Diagnosis, Treatment for Individuals under 21-Guidelines. Department of HEW, SRS, Washington. MSA Program Regulation Guide 21. June 28, 1972.

children with a history of pica and anemia are referred to a diagnostician to rule out abnormal lead levels in the blood.

Number screened. The case-finding activity described in the previous section resulted in screens of 5,519 children from 2,199 families in the period from November, 1972 through March, 1975. In addition, 713 (12.9%) of the children were screened more than once (received "periodic" screens subsequent to their original screen). The total number of screens reported for this period was 6,395.

Suspected problems discovered by screening. A positive finding on a screening procedure results in a (suspected) problem. The 6,395 screens resulted in 7,333 reported problems.

Number of problems per screen. The above figures average to 1.15 problems per screen. Table 2.2 shows that about one-third (34.6%) of the screens result in no detected problems and 31.2% of the screens detected two or more problems.

TABLE 2.2 Number of problems per screen

<u>Number of Problems Found Per Screen</u>	<u>Number of Screens</u>	<u>Percent</u>
0	2,211	34.6
1	2,186	34.2
2	1,239	19.4
3	489	7.6
4	188	2.9
5 or more	<u>82</u>	<u>1.3</u>
Total	6,395	100.0

Screen Completions. The 6,395 screens reported by the clinic are not necessarily composed of all the 19 screening procedures. A procedure may be omitted for two kinds of reasons.

The clinic has the option of declaring a procedure "not needed" for a child on the basis of the child's age, sex, and medical history. A screen which omits "not needed" procedures is regarded as complete.

Omitted procedures which result from inoperative equipment, inability of the child to provide a urine sample, oversight, scheduling problems, etc., result in incomplete screens. Data available since April of 1974 indicate that 35.7% of the screens reported by the Barrio Clinic were incomplete at the initial screening appointment as shown in Table 2.3.

TABLE 2.3. Incomplete screens and screening procedures (at initial appointment) by age groups as % of screens reported

Screening Procedure	Age 0-4 (N=1,180)	Age 5-11 (N=1,239)	Age 12 & older (N=324)	Total* (N=2,852)
Measurements	0.7	0.4	0.6	0.6
Hematocrit	1.9	1.0	2.2	1.4
Differential	1.4	1.8	1.2	1.6
Urinalysis	30.8	6.6	3.1	16.5
Tuberculosis	13.7	11.6	7.4	12.3
Hearing	6.9	5.6	1.9	5.8
Vision	9.8	8.7	2.5	8.3
Developmental	6.5	3.6	0.0	4.3
Physical	0.4	0.2	0.6	0.3
Total (one or more procedures not completed)	51.0	26.2	16.7	35.7
Total (excluding urinalysis and TB)	18.5	13.5	7.7	14.9

* Age groups do not add to total since age was not reported on about 4% of the screens.

The table shows that most of the incomplete screens are on children below five years old. Omission of the urinalysis and tuberculosis procedures account for most of incomplete screens. If these omissions were ignored, only

The following table shows the results of the experiments conducted on the effect of the concentration of the solution on the rate of reaction. The concentration of the solution was varied from 0.1 M to 0.5 M, and the rate of reaction was measured by the time taken for the reaction to complete. The results show that the rate of reaction increases with increasing concentration of the solution.

Table 1. Effect of concentration of the solution on the rate of reaction.

Concentration of solution (M)	Time taken for reaction to complete (s)	Rate of reaction (1/s)
0.1	120	0.0083
0.2	60	0.0167
0.3	40	0.0250
0.4	30	0.0333
0.5	24	0.0417

The results of the experiments show that the rate of reaction increases with increasing concentration of the solution. This is because a higher concentration of the solution means there are more particles available to react, leading to a faster rate of reaction.

The following table shows the results of the experiments conducted on the effect of the temperature of the solution on the rate of reaction. The temperature of the solution was varied from 20°C to 40°C, and the rate of reaction was measured by the time taken for the reaction to complete. The results show that the rate of reaction increases with increasing temperature of the solution.

14.9% of the screens would be incomplete.

Appointments for screening completions subsequently reduced the incomplete screens from 35.7% to 20.4% of the total screens reported; however, data are not available to determine the specific procedures administered at these appointments.

Incomplete screens also result from the clinic policy requiring that positive results on the urinalysis, hearing and vision procedures be confirmed by a retest before the child is referred for diagnosis and treatment. Failure to perform the required retests when retest appointments are not kept results in an additional 10.3% incomplete screens. This raises incomplete screens (including both those who are not finished at appointments subsequent to the original screen and those for which required retests are not performed) to 30.7% of the total screens reported.

Immunization status. At screening the child's immunization status on diphtheria-tetanus, polio, measles, and rubella is determined from records furnished by the mother. Records were obtained in this way for 1,194 (54.6%) of the original screens, with records more likely to be available for the younger children. Only 35.5% of the children with records available (or 19.4% of the children screened) are current at this time. Children in the 0 to 4 age group have relatively low levels of immunization against measles and rubella (see Table 2.4).

Immunizations administered at the time of screening bring 59.6% of the children with records available (or 32.6% of the children screened) to current status (see Table 2.4).

Further contacts with the children are relatively difficult since only 49% of the appointments for immunizations are kept. However, appointments

subsequent to screening bring the immunization status of 73.4% of the children with records available (40.1% of the children screened) to current status for diphtheria-tetanus, polio, measles and rubella.

TABLE 2.4. Immunization status of children at original screens for children with immunization records

Age Groups				
	0-4 years N = 534	5-11 years N = 519	12 and older N = 78	Total N = 1,194
Percent of Screens with Immunization Records Available				
	69.4	50.5	25.3	54.6
Percent Current Before Screening				
Diphtheria-Tetanus	46.6	65.7	64.1	56.4
Polio	42.9	58.4	61.5	51.3
Measles	36.5	68.8	64.1	53.6
Mumps	0.9	1.5	2.6	1.3
Rubella	35.8	70.9	59.0	53.9
Total excluding mumps	25.5	44.5	42.3	35.5
Percent Current After Screening				
Diphtheria-Tetanus	86.1	89.0	84.6	87.2
Polio	85.6	86.9	82.1	85.8
Measles	49.3	80.3	76.9	65.6
Mumps	1.7	1.3	5.1	1.7
Rubella	49.1	82.7	78.2	66.5
Total excluding mumps	46.4	72.3	67.9	59.6

Diagnosis and Treatment

Definitions. The diagnosis subsystem confirms and determines the nature or cause of a physical or mental disease or abnormality through the combined use of health history, physical, developmental and psychological examinations and laboratory tests and x-rays. The treatment subsystem provides services to

... ..
... ..
... ..

... ..
... ..



Figure 1: Comparison of data between Group 1 and Group 2.

... ..
... ..
... ..
... ..
... ..

correct or ameliorate diseases or abnormalities detected by screening and diagnostic procedures.

Overview. The Barrio Clinic provides diagnosis and treatment for both screening findings and non-screening detected problems (sick visits) in the medical, dental and developmental areas. The physicians who do the physical examination at screening also diagnose and treat many of the problems found by screening on site. Some of the diagnosis and treatment of screening detected problems is referred to outside providers.

A dental program envisioned by the clinic has not become operational although an occasional dental clinic has provided diagnosis and treatment of dental problems for a small number of children.

The clinic is open to walk-in sick visits during regular daytime hours. Clients coming in sick are served by the nursing staff, referred to outside providers, or are seen by the physicians who do screening.

The Barrio Special School (BSS), a component of the Barrio Clinic, does diagnosis and treatment of developmental (primarily language and learning) problems. The BSS serves children on a "stop gap" basis until they can be referred to other community treatment programs.

Diagnosis and treatment of screening findings. Eighty-one percent of the problems detected by screening are treated at the Barrio Clinic. The remainder are referred to other providers. Over 50% of referred problems are caries. Medicaid eligibles may be referred to either public or private providers, while the non-eligibles are referred to the Bexar County Hospital District or to public health or dental clinics.

Diagnosis and treatment performed at the clinic is a relatively undocumented area of Barrio Clinic operation, since an evaluation decision was

made to emphasize screening findings and treatment outcomes rather than trying to capture the multitude of types of treatment that could occur. Under our definitions, the clinic staff performs diagnosis and treatment whenever it determines, for example, that a rash is diaper rash and instructs the mother how to care for the rash and, perhaps, dispenses a preparation to ease pain or promote healing. This level of diagnosis and treatment is sufficient for many of the problems discovered by screening which, in the main, are mild problems. More serious conditions, not requiring the attention of a specialist, are also diagnosed and treated at the Barrio Clinic.

Sick visits. The clinic reports an average of 242 sick visits per month. One-fifth (21.5%) of the sick visits are handled by the nursing staff, and physicians treat the remainder.

The nurses treat diarrhea, fevers, upper respiratory infections and other minor conditions under standing or phone orders from the doctor. Upper respiratory and infective conditions, and anemias account for 60% of the sick visits seen by the nurses.

Two-thirds (68.3%) of the conditions encountered by the physicians at sick visits are in four groups: upper respiratory, ear (mostly otitis media), dermatological, and infective.

The sick visit service at the Barrio Clinic is used by a broad range of enrolled families, rather than being used intensively by a few. An examination of an 85% sample of sick visit records for the period October through December of 1974 showed that the children who used the sick clinic made an average of 1.38 visits. Since the average number of visits required per condition was 1.14, it is apparent that only a small fraction of the children returned to the clinic with another condition during this time. Only 14% of the families

brought in more than two children to sick clinics during these three months.

Barrio Special School. The Barrio Clinic began a program for diagnosis and treatment of developmental disabilities in December, 1973. The diagnostic function of the program reviews cases who have failed the Denver Developmental Test at screening and administers diagnostic tests to select those who are appropriate to the program.

Treatment in the BSS is aimed at improving language skills, with secondary attention to motor, perceptual-cognitive and self-help skills and socialization. Professional consultants from a local agency assist the BSS staff in designing an individualized curriculum for each child enrolled. Children below age three and those with serious emotional problems are not accepted into the program but are referred to outside providers when possible.

During the first eight months of the program, 25 children were treated in the BSS. The following table reflects the outcome of this activity:

TABLE 2.5. Outcomes of treatment at the Barrio Special School. February to September, 1974

Area	# With Developmental Age Initially 3 Months Below Chronological Age	% Improving (Pre- vs. Post test)	% With Developmental Age Equal To or Above Chronological Age at End of Period
Motor skills	9	77.8	55.6
Perceptual-cognitive	14	78.6	42.9
Self-help skills	10	80.0	40.0
Language skills	17	82.4	82.4
Socialization	14	100.0	50.0

Since September of 1974, an average monthly enrollment in the BSS has been 15.2 with an average of 2.9 new enrollees and 2.2 dismissals per month. The child shows for an average of 73.5% of the scheduled treatment sessions.

An average of 3.6 hour long treatment sessions are scheduled per child per month.

Recently eight children have been discharged from the BSS to a "preschool" program which the Barrio Clinic will operate in the Fall of 1975. Another five children have moved from the city, while two of the children have been enrolled with an outside provider. These 15 children were, on the average, 60 months old at discharge and had been enrolled for an average of nine months. Their average lags (chronological age in months minus developmental age in months) at enrollment and discharge are shown below.

TABLE 2.6. Developmental lags at enrollment and discharge from the Barrio Special School

<u>Area</u>	<u>Average Months Lag At Enrollment</u>	<u>Average Months Lag At Discharge</u>
Motor skills	8.4	7.0
Perceptual-cognitive	15.0	12.2
Self-help skills	5.8	4.7
Language skills	16.5	12.1
Socialization	14.9	11.0

Unfortunately, the BSS did not keep records of treatment sessions for the first part of the period during which these children were enrolled. As a result, the improvement evidenced by the above figures cannot be related to the amount of effort expended.

Case Monitoring

Definition. The case monitoring subsystem tracks all cases from the point of "show" at screening to assure completion of screening and to assure that those cases with problems receive diagnosis and treatment for all problems until they are corrected or have achieved maximum benefit from treatment

or are otherwise terminated, e.g. move out of town.

Overview. The primary method for case monitoring is appointing the client to return to the clinic for a "follow-up" visit at which his response to treatment is determined and further treatment undertaken, if necessary.

Failure to show for a follow-up appointment, or the determination of a problem by a lab procedure completed after the client has left the clinic, requires an attempt to contact the client by phone or mail. Since most of the families do not have phones, mail is the most frequently used method. If there is no response to the mailed request to come in or call for an appointment, a notation is made on the client's registration card kept at the appointment desk. The notation ensures that appropriate action on the problem can be undertaken if the client subsequently comes to the clinic.

The status of problems referred to outside providers is determined by contact with the parent or the provider by letter or phone.

A system whereby HSRI generates and sends to the clinic an IBM card produced by the HSRI data system identifying an unresolved problem (with appropriate identifying information) is intended to supplement the above procedures. The receipt of this card by the clinic constitutes a work list indicating cases on which more case-monitoring activity is required. After this activity is completed, the card is returned to HSRI with a notation to describe the problem resolution and the HSRI record is updated.

Apart from reappointing clients at the time of screening, case-monitoring efforts tend to be sporadic and non-cumulative since they are done during slack periods in other clinic activity and by volunteers, when available. No clear lines of responsibility for case monitoring have been defined and no full-time case monitors have been employed.

The difficulties encountered in case monitoring have forced the clinic to define some of the less serious problems as "not significant enough to follow". These problems are thereby removed from the case monitoring workload, so that attention may be given to those which are more serious and for which providers are available.

Case-monitoring outcomes. The Barrio Clinic screening subsystem has detected 2,850 problems since April, 1974. Some case-monitoring activity is documented for 65% of these problems. The outcome of the case-monitoring efforts is shown below.

TABLE 2.7. Resolution of problems at the Barrio Clinic

<u>Problem Status</u>	<u>Number of Problems</u>	<u>Percent of Total</u>
Not corrected	1,627	57.1
Corrected or treatment completed	590	20.7
Not significant to follow	314	11.0
False positives	167	5.9
Other miscellaneous terminations	152	5.3
	<hr/> 2,850	<hr/> 100.0

The 57.1% of the problems which are labelled "not corrected" are either known not to be corrected or are lost to the clinic or refused to return for follow-up and assumed to be either not corrected or false positives. Only 20.7% of the problems detected by screening are known to be corrected. The 167 problems shown as false positives are those which diagnosis determined were not actual problems (see Chapter III, page 24).

CHAPTER III

SCREENING FINDINGS

This chapter reports the rates of positive screening findings and describes some characteristics of the problems found by screening. It also compares rates of findings between AFDC and non-AFDC recipients and between original and periodic screens. Two parameters must be established initially:

1. The emphasis in this chapter is on original screens. The rates on periodic screens are reported for comparison only. Since the Barrio Clinic does not do outreach for periodic screens, clients requesting periodics are self selected and the possible bias produced by this self selection is unknown at this time.

2. Data are presented only on screens done from April, 197~~4~~⁵ through March, 1975. Inclusion of the Barrio Clinic in the Common Data Base in April, 1974 required an extensive modification in the kinds of data collected. Much of that data reported here are not conformable to data collected before that time.

Rates of Findings

Positive screening findings. The numbers of children screened (in three age groups) and the percent for whom there were positive (suspected abnormal) results are given in Table 3.1.

Almost two-thirds (65.6%) of the children screened have one or more positive results. Six procedures (hematocrit, differential, urinalysis, hearing, ears-nose-throat, and dental) each result in over 10% positive findings for those given the procedure. The single procedure which reveals the largest number of abnormalities is the dental procedure.

TABLE 3.1. Rates of positive findings of screens from April, 1974 to April, 1975 by age group

Screening Procedure	AGE GROUPS							
	0-4 years		5-11 years		12 and older		Total*	
	# Screened	% Abnormal	# Screened	% Abnormal	# Screened	% Abnormal	# Screened	% Abnormal
Lab and measurements								
Height and weight	756	2.9	1,012	7.4	303	9.6	2,151	6.1
Hematocrit	560	19.6	1,003	8.2	298	2.3	1,932	10.6
Differential	235	31.5	350	25.1	85	21.2	685	26.9
Urinalysis***	493	9.3	955	11.9	294	13.9	1,807	11.4
Tuberculosis	179	1.1	293	3.4	42	2.4	537	2.4
Hearing***	133	17.3	957	12.3	298	4.7	1,442	11.2
Vision***	104	12.5	924	8.7	291	7.9	1,371	8.7
Developmental	720	4.2	348	4.9	19	5.3	1,131	4.6
Total**	767	30.0	1,024	43.6	306	36.3	2,178	37.6
Physical exam								
Head and neck	766	3.5	1,019	9.2	303	9.1	2,173	7.2
Ears, nose & throat	766	21.3	1,020	12.6	308	11.7	2,174	15.5
Chest	766	4.2	1,020	0.8	308	0.3	2,174	1.9
Cardiac	766	1.2	1,021	0.8	308	---	2,175	0.8
Abdomen	766	2.7	1,021	1.4	308	0.6	2,175	1.9
Genitalia	766	3.0	1,021	2.1	307	2.9	2,174	2.5
Extremities	766	2.2	1,021	1.4	308	2.6	2,175	1.8
Skin	763	10.7	1,021	5.9	308	4.5	2,172	7.5
Neurological	764	0.8	1,021	0.9	307	2.3	2,172	1.1
Eyes	751	0.7	993	1.3	294	1.4	2,114	1.1
Total†	766	40.6	1,021	30.9	303	29.9	2,175	34.2
Dental (Total)	766	5.1	1,020	28.5	303	24.4	2,174	19.5
Total†	770	61.6	1,025	69.8	308	64.3	2,184	65.6

* Age groups do not add to total since age was not reported on about 4% of screens.

** One or more of the above eight procedures were given.

*** These are results based on the first administration of the procedure. Clinic policy requires that positive findings on this procedure be confirmed at a retest before diagnosis and treatment. Retest results (discussed on pages 24 to 26) indicate that a large percentage of these findings are false positives.

† One or more of the above ten procedures were given.

‡ Children receiving one or more of the 19 above procedures.

Differences in the rates of positive findings between the three age groups are of some interest. Children in the 5-11 year age group have positive findings more often than younger or older children. This difference is largely due to the high number of positive results on the dental procedure among the 5-11 year old children.

The cross-sectional data in Table 3.1 are consistent with the established longitudinal relationship between poor nutrition in the early years of life and growth abnormalities which become obvious in later years. Nutritional deficiencies are in evidence in these data in the abnormal hematocrit results and in the suspected abnormalities under the skin procedure (diaper rash resulting from diarrhea) of the physical examination. Growth abnormalities are reflected by abnormal height and weight measurements.

False positives. A suspected abnormal (positive) screening finding is a false positive if the condition indicated by the screening test is not actually present.

The Barrio Clinic has a policy of retesting children with positive results on the urinalysis, hearing and vision procedures. Records resulting from the retests for the period January through March, 1975 indicate that the false positive rates for these procedures are quite high. Table 3.2 shows two estimates of the false positive rates for the three procedures. The estimates give different rates of false positive results depending on whether the total number of positive findings or the number of positive findings retested is used as the base (denominator) in the calculations. For the hearing and vision procedures, the lower estimates (34.5% and 25.6%) are probably the more accurate, since many of those not retested were serious cases who were referred to specialists immediately. The false positive rate for the

The first of these is the fact that the
... of the ... is ...
... of the ... is ...
... of the ... is ...

The second of these is the fact that the
... of the ... is ...
... of the ... is ...
... of the ... is ...

The third of these is the fact that the
... of the ... is ...
... of the ... is ...
... of the ... is ...

The fourth of these is the fact that the
... of the ... is ...
... of the ... is ...
... of the ... is ...

urinalysis procedure is probably near 100% since those not retested are not serious cases. The clinic, in fact, makes little effort to retest positives on this procedure.

TABLE 3.2. False positives by procedure at the Barrio Clinic

Procedure	# Positive at Screen	# Retested	# Negative at Retest	% False Positives High Estimate*	% False Positives Low Estimate**
Urinalysis	49	7	7	100.0	14.3
Hearing	29	18	10	55.6	34.5
Vision	43	33	11	33.3	25.6
Total	121	58	28	48.3	23.1

* Number positive at retest divided by number retested.

** Number positive at retest divided by number positive at screen.

False positive rates on the remaining individual screening procedures are undetermined. Retests are not performed for the other lab and measurements procedures; and, since the physical examination is performed by physicians who do screening, diagnosis, and treatment almost simultaneously, false positives and corrected problems are indistinguishable.

Based on the information returned by the case-monitoring subsystem (see above, page 21) the overall false positive rate is 18.4% (167 false positives out of 909 problems monitored).

False negatives. If screening fails to detect a problem when, in fact, one exists, the result is a false negative. The data from the clinic are not sufficient to establish rates of false negatives in a systematic way, but several pieces of information suggest that false negatives do occur for some procedures.

The extremely low rate of dental caries reported by the clinic⁷ suggests that false negatives for this procedure may be quite frequent. This low rate may be attributed to the fact that physicians, rather than dentists, do the screen and to the fact that proper equipment is not available to them. The caries which are recorded are gross cases, observable by mouth inspection. The rates of reported dental abnormalities show substantial variation across the six physicians performing the procedure. One physician reports dental abnormalities on only 2.8% of the 246 children examined, while another physician, examining 340 children of the same average age, reports 32.6% as abnormal on this procedure (see Table 3.3).

Variation in rates across examiners. The variation in rates of positive findings among physicians (Table 3.3) can probably be partly attributed to

TABLE 3.3. Percent of children with positive screening findings on the physical examination by examiner

Examiner	1	2	3	4	5	6
Number Examined	58	246	408	340	42	531
Physical Examination Procedure						
Dental	22.4	2.8	13.0	32.6	40.5	20.5
Cardiac	1.7	0.4	0.5	1.2	0.0	0.8
H & N	8.6	1.6	1.5	12.0	7.1	7.3
ENT	22.4	12.6	10.0	29.4	14.3	15.1
Chest	6.9	0.8	0.7	1.8	0.0	2.1
Abdomen	3.4	3.3	1.0	1.8	0.0	2.1
GNT	5.2	2.4	1.2	4.1	7.1	2.6
Extremities	1.7	0.8	1.0	2.9	2.4	1.7
Skin	15.5	3.3	4.2	7.0	4.9	8.3
Neurological	6.9	1.2	0.5	0.3	0.0	0.9
Eyes	6.9	0.0	0.7	0.9	0.0	0.9

⁷ The Health Start program found that 62% of Mexican-American children screened needed dental treatment. See L.M. Vogt et. al., Health Start: Final Report of the Evaluation of the Second Year Program. Washington, D.C.: The Urban Institute, 2100 M Street N.W., 1973.

differential sensitivity to conditions related to the physicians' areas of specialization and to a tendency for the clinic staff to appoint children to see doctors with the appropriate specialization when problems in their area of specialization are suspected. Differential judgments of the significance of different kinds of problems are probably involved as well.

The variation in rates among staff types performing the lab and measurements procedures (Table 3.4) may be related to the Registered Nurses being able to make a better judgment of the significance of slight deviations from normal. For example, on the urinalysis procedure the rates of positive findings detected by Registered Nurses are probably more accurate than those detected by the other staff types. The high rate of positive findings by Registered Nurses for the hearing and vision procedures probably results from

TABLE 3.4. Number examined and percent of those examined with abnormal findings, by staff type

Procedure	Examiner Type			
	RN	LVN	Aide	Other
Height & Weight	N - 511 (%)-(9.0)	486 (6.2)	842 (5.0)	312 (4.5)
Hematocrit	389 (10.0)	1,346 (10.4)	113 (7.1)	84 (21.4)
Differential	119 (21.0)	477 (29.8)	48 (18.8)	41 (19.5)
Urinalysis	331 (5.7)	452 (14.4)	785 (11.6)	239 (13.0)
Tuberculosis	277 (0.0)	379 (2.6)	18 (5.6)	66 (0.0)
Hearing	86 (15.1)	156 (10.9)	1,012 (10.8)	188 (10.6)
Vision	135 (17.8)	210 (12.4)	803 (4.5)	223 (12.6)
Developmental	36 (11.1)	33 (6.1)	940 (3.9)	122 (5.7)
Total	1,884 (9.0)	3,539 (12.2)	4,561 (7.3)	1,275 (9.9)

their being assigned the more difficult cases for testing.

In general, the variation in rates of positive findings among physicians and staff types suggests that either false positives or false negatives, or both, occur in screening. In the absence of established prevalence rates for this population the degree or kind of error cannot be determined unless a quality control (rescreening of children by one or more different screeners) procedure is established for research.

Significant costs, both in terms of dollars and human convenience and fulfillment are associated with both false positives and false negatives. The interested reader is referred to an article by Frankenburg⁸ for a discussion of these costs.

Characteristics of Screening Detected Problems

Problems found. Suspected abnormalities found at screening are categorized into one of the 39 ICDA groups which are listed and defined in Appendix B. This categorization is necessary since the screening procedures (especially in the physical examination) do not describe the medical characteristics of a problem.

Suspected problems found by screening are shown in Table 3.5. The most frequent problem is dental caries which accounts for almost one-sixth of the total problems. The most common non-dental problems found are anemias and genitourinary problems. Over 90% of the problems are in 13 ICDA categories.

The number of problems in the categories varies widely, partly as a consequence of the differences in prevalence in the population and partly as a result of the range of ICDA codes contained in a category.

⁸ Frankenburg, W.K., "Selection of Diseases and Tests in Pediatric Screening," Pediatrics, Vol. 54, No. 5 (November 1974) 612-616.

TABLE 3.5. Percent of problems by age groups

Problem Category	Age Groups			Total	
	0-4 years	5-11 years	12 and older	Number of Problems	% of Total Problems
Caries	5.0	20.6	21.9	363	15.8
Anemias	16.4	7.3	2.3	218	9.5
Genitourinary	7.2	9.7	14.6	217	9.4
Pinworms	10.3	7.6	6.0	186	8.1
Otitis Media	11.5	5.8	4.3	173	7.5
Hearing Loss	3.3	10.1	4.7	164	7.1
Dermatological	10.9	4.4	5.3	156	6.8
Infective	3.7	8.2	8.3	154	6.7
Measurements	3.5	6.9	11.0	150	6.5
Refractive	2.5	6.9	8.0	127	5.5
Upper Respiratory	9.4	2.7	4.0	116	5.1
Developmental	4.3	1.4	0.3	53	2.3
Psychoses, etc.	1.1	1.2	1.0	27	1.2
All Others	10.9	7.2	8.3	196	8.5
Total	100.0	100.0	100.0	2,300	100.0
Total number of problems*	722	1,187	301	2,300	
Number of children screened**	770	1,025	308	2,184	

* The sum of problems in the age groups does not add to the total number of problems since age information was missing for about 4% of the children.

** Number of children receiving one or more of the screening procedures (from Table 3.1).

For persons interested in greater detail about the verbal descriptions of problems in various categories, Appendic C has been included to show types of conditions reported in each grouping. A review of that listing shows several cases of milk intolerance, malnourishment, failure to thrive, emotional problems, hyperkinesis, mental retardation, hydrocephalus, several orthopedic deformities (which are correctable), glaucoma, strabismus, deafness (several new cases), heart murmurs, scabies, bleeding gums, glycosuria, inguinal hernia, ringworm, collagen disease, cleft palate, ketonuria, and many others, many of which were known, but not under adequate care.

Problem history. When possible, the child's mother is questioned concerning the previous history of screening detected problems, i.e., is she aware of the problem, and, if so, has it been treated. For the problems for which this information is reported, over 59% were previously unknown. Almost 37% of the problems were previously known but are not under treatment; less than 4% of the problems have previously been treated. Table 3.6 shows the history of the 13 most frequently occurring problem categories.

Given the high rate of false positives indicated on urinalysis, it is understandable that the majority were considered "new". The high rate of problems that were "known, but not under care" for caries, otitis media, skin problems, infective problems (also including lice, mites, etc.), and psychoses indicates that care for these conditions is not accessible to the target population or that parents are not concerned about these conditions.

Severity of problems. The screener rates a suspected problem as either mild, moderate or severe (compared to other problems of that type). Almost three-fourths (74.5%) of the problems detected at screening are mild, and only 7.7% are severe. Table 3.7 shows the severity of the most frequently

TABLE 3.6. Previous history of screening detected problems

Problem Category	Number of * Problems With History Reported	Percent Previously Unknown	Percent Previously Known Not Under Care	Percent Previously Known and Under Care
Caries	355	24.2	73.2	2.5
Anemias	201	97.5	2.0	0.5
Genitourinary	200	95.5	4.5	0.0
Pinworms	185	98.9	1.0	0.0
Otitis Media	166	64.5	28.9	6.6
Hearing Loss	157	93.0	6.4	0.6
Dermatological	151	25.2	66.9	7.9
Infective	141	24.8	72.3	2.8
Measurements	142	54.2	45.1	0.7
Refractive	122	77.9	13.1	9.0
Upper Respiratory	105	39.0	55.2	5.7
Developmental	45	80.0	20.0	0.0
Psychoses, etc.	26	15.4	80.8	3.8
All Others	173	32.4	56.1	11.6
Total	2,169	59.5	36.9	3.6

* This information is not reported for about 6% of reported problems.

Table 3.7. Rated Seriousness of Problems.

Problem Category	Number of Problems with Seriousness Reported	Seriousness		
		% Mild	% Moderate	% Severe
Caries	344	60.5	26.7	12.8
Anemias	204	69.6	19.1	11.3
Genitourinary	199	94.0	5.0	1.0
Pinworms	185	82.2	7.6	10.3
Otitis Media	162	66.7	22.2	11.1
Hearing Loss	156	85.3	11.5	3.2
Dermatological	148	72.3	20.3	7.4
Infective	139	74.1	20.9	5.0
Measurements	141	79.4	17.0	3.5
Refractive	121	70.2	19.8	9.9
Upper Respiratory	102	87.3	9.8	2.9
Developmental	40	67.5	22.5	10.0
Psychoses, etc.	26	61.5	38.5	----
All Others	171	72.5	21.1	6.4
Total	2,138	74.5	17.8	7.7

occurring problems.

Moderate and severe problems tended to be followed more closely than the mild problems. Whereas (as shown in Chapter II) only 21% of all problems were reported corrected, 31% of the moderate and severe problems were corrected.

Comparison of Rates for AFDC and Non-AFDC Recipients

Since the Barrio Clinic serves both AFDC and non-AFDC recipients, a comparison of the rates of findings for the two groups is possible.

The rate of positive findings on original screens for the two groups (65.1% of AFDC and 65.6% of non-AFDC children had at least one positive result at screening) are essentially equal. However, considering only children with positive findings, the 152 AFDC children averaged 1.90 problems while the 2,084 non-AFDC children averaged 1.68 problems. A t-test between these means indicates that this large a difference in mean number of problems would be expected by chance only 2.5 times in 1,000. These data indicate that, while the same proportion of children in the two groups had no problems identified by screening, those AFDC children who did have problems had a larger number of problems than their non-AFDC counterparts.

The finding that the AFDC children have more health problems than the non-AFDC children is confirmed by a difference in the number of sick visits in the year before screening reported by the two groups. The AFDC children report an average of 1.38 sick visits, while the non-AFDC children average 0.78 visits.

Comparison of Rates on Original and Periodic Screens

One goal of EPSDT is to reduce the number and seriousness of problems found among older children by detecting and correcting problems early. The

data from the Barrio Clinic allow comparison of rates of positive findings between original and periodic screens for 713 children. On their original screens 59.8% of the children had at least one positive result, while 58.1% had a positive result on the periodic screen. These rates suggest no reduction in the proportion of children with positive findings. However, considering only children with positive findings, there were 1.83 problems found (per child with at least one problem) on original screens, but only 1.54 problems per child on the periodic screens. A t-test on the difference between these means indicates that a difference this large can be expected by chance less than five times in 10,000. These data indicate that the number of problems found are significantly fewer on periodic than on original screens.

These data cannot be interpreted as evidence that the treatment of problems detected at the original screen resulted in fewer problems detected at the periodic screen. More generally, no relationship between screening and subsequently improved health can be established from data such as these, since the findings are obscured by an important alternative explanation, i.e., self selection.

Self selection for periodic screens. The children who return to the clinic for periodic screens do so in the absence of the urgings of the community aides or any active outreach effort. On this basis alone, these children differ from the "average" child coming to the clinic. One may suspect that these children represent (by and large) only those whose health has improved subsequent to their original screen and that those whose health has not improved see no benefit to be gained from another visit to the clinic. While the data do not confirm this explanation, neither can they show it to be unfounded.

In general, the confounding effect of self selection can be controlled only by the establishment of a control group, i.e., administering periodics to some randomly selected or representative subset of the original screens.

CHAPTER IV

COSTS

A primary objective of the Barrio Clinic demonstration project is to document the costs of EPSDT services in a neighborhood clinic environment. This chapter (a) describes the methodology used to allocate costs and shows the total and unit costs incurred by each of the EPSDT subsystems, the sick clinic, and the Barrio Special School; (b) discusses several restrictions on the transferability of cost data from this to other projects; (c) projects costs incurred by the project to a project with a more extensive case monitoring component; and (d) shows the costs of individual screening steps in terms of time of administration and materials consumed.

Cost Allocation Methodology. Dollars spent by the Barrio Clinic were reported on a quarterly basis to HSRI by the project's fiscal officer. About two-thirds of the expenditures can be readily assigned to activities in the EPSDT subsystems, the sick clinic or the Barrio Special School. These costs may be termed direct costs. The remaining one-third of the costs, indirect costs, are allocated to activities in the proportion established by the direct costs. Indirect costs are those costs which cannot be assigned to specific subsystem activities. These include a large proportion of the administrative salaries, salaries to staff when they are, for example, involved in a general staff meeting, payments for office supplies, and the like.⁹ The total of direct and indirect costs attributed to the EPSDT subsystems, the sick clinic and the Barrio Special School are shown in Table 4.1.

⁹A system for reporting and allocating costs is detailed in the EPSDT Evaluation Handbook published by the Health Services Research Institute.

TABLE 4.1. Expenditures, service units, and costs per service unit

	Nov.- Dec. 1972	Jan.- March 1973	April -June 1973	July- Sept. 1973	Oct.- Dec. 1973	Jan.- March 1974	April -June 1974	July- Sept. 1974	Oct.- Dec. 1974	Jan.- March 1975	April -June 1975	Monthly Average	Total
A. EXPENDITURES PER SERVICE CATEGORY (IN DOLLARS)													
Case Finding	4,438	7,310	7,366	7,891	7,474	7,446	7,033	7,904	8,249	7,219	8,152	2,515.06	80,482
Screening	3,887	8,860	10,046	11,415	10,322	14,289	11,632	13,869	17,681	11,742	18,237	4,124.38	131,980
Diagnosis & Treatment of Screening Findings	3,333	8,180	10,871	9,044	7,657	7,303	6,127	8,930	4,552	6,538	7,994	2,516.53	80,529
Case Monitoring	1,900	3,544	3,480	3,739	3,653	2,423	3,843	5,479	3,143	1,917	3,810	1,154.09	36,931
Barrio Special School	. . .	. . .	. . .	. . .	. . .	8,080	7,373	7,673	3,973	6,466	10,951	2,473.11	44,516
Sick Visit	4,887	10,085	10,173	9,615	10,888	7,342	7,499	8,968	10,177	8,281	10,912	3,088.34	98,827
Total	18,445	37,979	41,936	41,704	39,994	46,883	43,507	52,823	47,775	42,163	60,056	14,789.53	473,266
B. SERVICE UNITS													
Screens	72	599	722	967	618	898	693	747	720	767	825	238.38	7,628
Sick Visits	198	489	328	324	504	621	543	437	658	619	700	169.41	5,421
Barrio Special School Enrollment	. . .	. . .	. . .	. . .	. . .	25	25	25	50	50	47	39.61	222
C. COST PER SERVICE UNIT (IN DOLLARS)													
Case Finding Dollars per Screen	61.64	12.20	10.20	8.16	12.09	8.29	10.15	10.58	11.46	9.41	9.88	. . .	10.55
Screening Dollars per Screen	53.99	14.79	13.91	11.80	16.70	15.91	16.78	18.57	24.56	15.31	22.11	. . .	17.30
Diagnosis & Treatment Dollars per Screen	46.29	13.66	15.06	9.35	12.39	8.13	8.84	11.95	6.32	8.52	9.69	. . .	10.56
Case Monitoring Dollars per Screen	26.39	5.92	4.82	3.87	5.91	2.70	5.55	7.33	4.37	2.50	4.62	. . .	4.84
Sick Visit Dollars per Visit	24.68	20.62	31.02	29.68	21.60	11.82	13.81	20.52	15.47	13.38	15.59	. . .	18.23
Special School Dollars per Child Enrolled	. . .	. . .	. . .	. . .	. . .	323.20	294.92	306.92	79.46	129.32	233.00	. . .	200.52
Total Dollars per Screen	256.18	63.40	58.08	43.13	64.72	52.21	62.73	70.71	66.35	54.97	72.80	. . .	62.04

Data characteristics. Several points must be established to permit valid interpretation of the data presented in Table 4.1.

1. Case finding includes all work done by the community aides in the homes. This includes taking the child and family health history and doing the Denver Developmental Test. These are more properly screening than case-finding functions, but are inseparable from case-finding costs for these data. As a result, neither screening nor Barrio Special School costs include developmental screening costs.

2. Costs for the sick clinic are listed separately, but they may also be considered as case-finding costs since the availability of the sick clinic, as the most highly valued of the clinic services, provides leverage to the outreach function (see Chapter II). Case-finding costs including the sick clinic may be computed by adding the rows titled "case finding" and "sick visit" from part A of Table 4.1.

3. The number of screens shown in part B of Table 4.1 are from records kept by the clinic for payment to doctors. These numbers are on the average 6% higher than the number of screens represented on the HSRI data system. The discrepancy is due, in part, to forms rejected from the system due to name or identification number errors and, in part, to an, as yet unspecified, gap in the flow of forms between the clinic and HSRI.

4. Flexible use of personnel at the clinic helps to keep the costs low. The costs are, therefore, probably not representative of EPSDT programs operating as governmental agencies, especially when these are restricted by rigid personnel policies and employ a staff of contract or salaried physicians.

The following three points partially describe the clinic's use of personnel:

A. The clinic uses volunteers especially in the Barrio Special School

and in the case-monitoring subsystem. Some volunteers are also used in screening and for clinic record keeping. Firm counts of volunteer hours are not available; however, the clinic estimates that volunteer workers have filled the equivalent of two productive full-time positions. On this basis, the costs reported in the total column of Parts A and C of Table 4.1 might be increased by as much as 5%.

B. Physicians perform physical exams and see sick clients for a fee of \$4. This low fee is equivalent to a subsidy to the clinic by the physicians.

C. Personnel with various skill levels perform the various screening procedures. Table 3.4 (page 27) shows the distribution of personnel of different skill levels performing the screening procedures. The flexibility here results in the more highly skilled personnel being available to handle the more difficult cases, while less skilled personnel deal with the more typical cases.

5. The costs of operating a clinic in San Antonio are probably lower than operating an identical clinic in another region of the country. Both wages and cost of living in San Antonio are low compared to national averages. Although the Consumer Price Index (CPI) is not reported for San Antonio, it is reported for Austin, the capital city 70 miles away. The Austin CPI was 4% below the national CPI at the end of 1974, and according to reports of the Bureau of Labor Statistics¹⁰, family budgets in Austin are 13% below the urban U.S. average. On this basis, the costs at the Barrio Clinic are probably 5% lower than could be expected in urban areas in general.

6. The clinic makes full use of second hand, donated, and government

¹⁰ "Family Budget Levels in the Southwest", DHEW Region VI, Dallas, Texas; Autumn, 1973.

surplus furniture, supplies and equipment. This use, combined with reasonable rent, keeps the costs below those incurred by less frugal organizations.

Projection of costs to a maximally functioning system. If case-monitoring efforts at the Barrio Clinic were upgraded to equal case-finding efforts (expenses), additional costs would be \$5.71 per screen. At 10.55 case monitoring dollars per screen, the system might monitor 90% of the problems detected by screening, instead of the 42.9% presently monitored.

Increased case-monitoring efforts would lead to additional demand and expenditures for diagnosis and treatment. Using the period April, 1974 to April, 1975 as the base, the clinic monitored 1,223 of the problems detected. Ninety percent of the problems detected would be 2,565 problems. Case monitoring at present levels produces enough diagnosis and treatment to average to \$10.56 per screen. These figures allow us to establish the ratio:

$$\frac{1,223}{2,565} : \frac{\$10.56}{x}$$

Solving for x, we get \$22.15 for diagnosis and treatment per screen.¹¹

Table 4.2 summarizes unit costs for all services per child screened for the clinic as presently operating and under the expanded case-monitoring program described above. Projected costs under the expanded program would be \$83.08 per child screened, or about 26% higher than present costs.

The figures in Table 4.2 represent the HSRI's best estimate of the operating costs of an EPSDT project operating from a neighborhood health center, given the qualifications listed under the data characteristics section above.

¹¹ It is recognized that the relationship between problems monitored and the cost of diagnosis and treatment may not be linear, but no data exists for estimating a different equation for the relationship.

TABLE 4.2. Cost per services (per child screened) at Barrio Clinic at present and projected costs under an expanded case-monitoring program

<u>Activity</u>	<u>Present</u>	<u>Expanded Case-monitoring</u>
Case finding	10.55	10.55
Screening	17.30	17.30
Diagnosis and Treatment*	10.56	22.15
Case monitoring	<u>4.84</u>	<u>10.55</u>
Subtotal	43.25	60.55
Developmental**	9.57	9.57
Sick treatment	<u>12.96</u>	<u>12.96</u>
Total***	65.78	83.08

* Medical and dental only.

** Total Barrio Special School costs from Table 5.1 divided by number of children screened since the Barrio Special School was initiated. Costs of diagnosis and treatment only.

*** This table includes only costs incurred by the clinic. Referred diagnosis and treatment may be estimated to be \$10.00 under the present program and \$13.00 under an expanded program.

Time of administration and cost of materials for screening procedures. A time and motion study conducted in June of 1975 obtained estimates of the time required to conduct the various screening procedures and to administer the health history questionnaire at the Barrio Clinic. These estimates and related statistics are presented in Table 4.3.

Table 4.3 also presents estimates (obtained from the clinic business manager) of the cost of consumable supplies associated with the screening procedures.

The data presented in Table 4.3 may be useful, as planning figures, to

those contemplating beginning a screening program.

TABLE 4.3. Mean, sample size, and standard errors of time to administer screening procedures and cost of consumable supplies for screening procedures at the Barrio Clinic

<u>Procedure</u>	<u>Mean (minutes)</u>	<u>Sample Size</u>	<u>Standard Error of the Mean</u>	<u>Cost of Supplies</u>
Measurements	3.66	19	.85	\$0.02
Hematocrit	10.90	15	.37	----
Sample	4.73	15	.41	0.07
Laboratory	6.26	15	.12	0.50
Urinalysis	6.89	18	1.62	----
Sample	6.02	19	1.58	0.10
Laboratory	.92	18	.11	0.02
Hearing	6.20	15	1.60	0.01
Vision	4.50	14	.73	----
Developmental*	10.00	18	1.24	0.11
Physical examination	12.09	22	1.59	0.05
Health history	12.69	16	1.66	\$0.10

* The Denver Developmental Test or the Wide Range Achievement Test as age appropriate.

CHAPTER V

ATTAINMENT OF PROJECT OBJECTIVES

This chapter relates the Barrio Clinic's activities and outcomes, as presented in earlier chapters, to the broad objectives established in the original proposal and to the more detailed objectives stated in the 1974 continuation proposal.

Original Project Objectives

Objective 1. To establish a child health care program at two neighborhood centers (one in a heavily Mexican-American area, one in a Black area), where qualified pediatricians and dentists will hold regular hours. Participating physicians and dentists will be reimbursed on a fee-for-service basis.

The project was funded in July, 1972 and the clinic in the Mexican-American area began operation in November. By December, 1972 it became clear that funds would not become available for a second clinic in a Black neighborhood. Thus, only one clinic was established.

A rotating staff of six pediatricians hold regular hours at five afternoon and one evening clinic per week. They receive a fee of \$4.00 per child seen for screening or a sick visit.

Occasional dental clinics using borrowed and donated equipment are held; however, a regular dental program has not been established. Participating dentists are also reimbursed at \$4.00 per child examined or treated. The failure to establish a regular dental program resulted from a shortage of dentists in the community who will work for this low fee.

Objective 2. To provide a staff training program in which community residents will receive training in community outreach techniques, nutrition and consumer education, diagnosis of family needs in order to make referrals

and maintain linkages with appropriate social and public service agencies, etc.

Five community residents, trained as health aides by another local agency, were employed as community aides to do case finding and other health related supportive services for the clinic. More recently only persons who have completed nurses aide training or the equivalent have been employed. The aides are trained to perform an advocacy role and to make referrals to local social and health service agencies. They are also thoroughly familiarized with, and often work in, the screening clinic. Continued training is provided at regular staff meetings. A more complete description of the community aides and their activities is presented in the case-finding section of Chapter II.

Objective 3. *To undertake a community outreach program in which the community outreach workers will communicate with families within the catchment area to assure that all eligible children are being reached for early screening, diagnosis and treatment and that families are being provided health education. A rented station wagon will be used to transport staff and clients for follow-up screening and treatment.*

The community aides conduct door-to-door visits in the area to describe the clinic and its services to the eligible families they encounter. The search has not been conducted in a systematic way in that communication among the aides and between the aides and their supervisor regarding areas or streets covered is informal.

About 37% of the estimated 15,000 eligible children in the area have been screened.

Since the outreach activity of the aides is the primary source of children to be screened, time taken by the aides to accomplish case monitoring to encourage mothers to get the children treated results in a lowered number of shows for screening--leaving the screening staff idle. Since funds were not available to hire full-time case monitors, a decision was made to do case

monitoring by methods which take little time--i.e., letter, telephone, and clinic reappointment.

One station wagon for transportation proved inadequate and two nine passenger vans were leased to meet the transportation needs.

Objective 4. To develop a uniform record-keeping system, which will serve as the core of a centralized, longitudinal effort to keep track of Barrio children, their health and family circumstances, and the adequacy with which their needs are being met.

Three different record systems have been used at the Barrio Clinic.

When the clinic began operation in November, 1972 the first record system was implemented; however, early in 1973 it became evident that the system needed refinement to close gaps and to format the records for input of relevant items to a computer. The second (computerized) system revealed a large amount of inaccurate, missing, and unreadable data. The HSRI hired a records clerk to work at the clinic to overcome these problems, and a more workable system emerged.

The third record system resulted from the inclusion of the Barrio Clinic in the "common data base" and from the recommendations of an interim evaluation of the clinic which was completed in January, 1974. It was developed with substantial input from the clinic staff which resulted in greater accuracy of data entered and more complete records. This system includes a family history and child history for each child, a screening sheet for each screen, and a problem sheet for each problem detected in screening.

The record system achieves the results specified by the above objective in that it documents the health and family circumstances and the services provided to each child. However, the computer interface between the clinic and the record system is necessary for without that interface, or the development

of a supplementary "tickler" file, the system will not serve to prompt required case-monitoring activity. Given the computer interface the system serves well and is capable of producing both summary information on clinic activities and lists of children in need of case monitoring, families in need of health education classes, children with nutritional problems, or the like.

Objective 5. To utilize the record-keeping system to obtain baseline data for evaluation of the project and analysis of its cost-effectiveness in meeting the health needs of the population served. It is expected that if the project continues for several years, vital information will be gathered regarding the value of preventive medicine in improving both the physical and mental health of the clients served. If data can be collected for a decade or more, the effect of preventive medicine and health education on economic patterns and educational attainment can also be researched.

Many of the data in this report were derived from the clinic records and the associated data processing system. The costs of providing the services offered by the clinic have been documented as shown in Chapter IV. However, to be useful in documenting the value of preventive medicine either in terms of improved health status or in terms of reduced medical costs, the information in the data system must be linked to external criteria, e.g., payments made to medical providers before and after receipt of the clinic's services or the health of children who did not receive periodic screens at the clinic. Unless the appropriate control groups are established and compared to recipients of the clinic's services, the clinic's effect in bringing about significant or lasting changes in its clients cannot be documented. An attempt to gather information regarding the reduction of medical costs resulting from screening was not successful since the State Medicaid payment profile system has been inoperative prior to the date of this report.

Objective 6. To utilize the project as a model for replication [in whole or in part] in other communities as the Social Security Act requirement takes effect--that early screening, diagnosis and treatment programs be implemented for Medicaid eligible children throughout the nation.

Hundreds of visitors have seen the clinic in operation and some have used ideas developed there for building or modifying their own programs. For example, the State of Texas has contracted with a San Antonio agency to do outreach for its EPSDT program using community aides due to the success of the Barrio approach. So far as HSRI knows, no other programs which are strictly modeled after the Barrio Clinic program have been initiated.

The concept of a fixed screening site located near the child population which includes all aspects of EPSDT under one roof represents a viable alternative to fragmented EPSDT services, but it is difficult to isolate the factors present in the Barrio Clinic which makes it work--strong nurse director, interested pediatricians, transportation, use of community aides, sick clinic in the same building, etc.

Final Year Objectives

Objective 1. Increase the functional level of health in the target child population.

A. Screen children ages 0-12 in a designated ten census tract area of west San Antonio.

1. Perform a total of at least 3,700 screening examinations in the period of July 1, 1974-June 30, 1975.

The clinic reported that 3,059 children were screened during the July, 1974 through June, 1975 period.

a. Send notification of, and make available to all children previously enrolled, a rescreening examination. (Predicted 50% yield, or approximately 1,200 rescreens.)

Children are encouraged to return according to the appropriate periodic schedule, but they are not formally notified when it is time for a periodic. Children who appear healthy are sometimes given dental, hearing, vision, height and weight and hematocrit tests and unless problems are indicated by these tests, the physical examination is not given on a periodic basis. Children checked in this manner are not reported as having received periodic screens.

The clinic reported that 725 (23.7%) of the screens reported during this time were periodic screens.

- b. *Enroll and screen additional children to capacity of clinic operation. (Approximately 2,500 new screens.)*

The 3,059 screens included 2,370 original screens.

- 2. *Perform all screening procedures appropriate to each individual child.*

Twenty percent of all screens were incomplete. Most of these resulted from failure to perform the tuberculosis and urinalysis procedures. If failure to complete these procedures (which have very low rates of true positive findings) is ignored, only 8.5% of the screens are incomplete.

- B. *Ensure medical treatment of screening detected problems: specify a clinic treatment plan and/or refer to community providers all detected abnormalities.*

Eighty-one percent of the screening detected problems are treated at the clinic. The remainder are referred to community providers. Half of the referred problems are dental caries.

- C. *Follow up all significant health problems to ensure optimum problem resolution.*
 - 1. *Ensure proper resolution on all established treatment plans and referrals for both screening-detected and sick visit abnormalities.*

Some case-monitoring activity is documented for 65% of the screening detected problems, but only 21% of the problems are known to be corrected. Another 6% of the problems are false positive, and 11% are considered too minor to warrant case-monitoring activity. Five percent of the problems are being monitored by outside providers or the children have moved out of the area. The remaining 57% of the problems are known not to be corrected or are lost to the case-monitoring system and are presumed to be either not corrected or false positive. It is likely, however, that some of these latter problems are, in fact, corrected since many of them are known to have been treated at the clinic.

2. *Follow up and recheck on all screening test failures in accordance with established clinic protocols.*

According to the study of retests for vision and hearing reported in Chapter II, 68% of the children with vision problems needing retest, got retested and 72% of the children needing a hearing retest, got one. The Denver failures are followed carefully by the Barrio Special School program for language and learning problems.

- D. *Provide a comprehensive care setting in which a family in need of episodic care may seek and receive services.*

The clinic provides comprehensive care for children including treatment for minor conditions at the clinic and direct referral to private specialists or to referral clinics at the Bexar County Hospital.

1. *Health counseling*--Health counseling is given as a part of the nurses explanation of the health problem at the end of screening or at sick visits. The clinic reports an average of 325 families given health counseling per month.

2. *Episodic sick visits*--An average of 242 sick children are treated at sick visits at the clinic each month.

3. *Interface with other community agencies and providers*--The interface with community agencies is emphasized. Working arrangements with the Mexican-American Unity Council Child Mental Health program, the Bexar County Hospital District, receipt of immunization doses from the San Antonio Metropolitan Health District, provision of experiences for medical students and nursing students, receipt of donated equipment such as a dental chair, vision tester, etc., all reflect an active interface with the community.

Bexar County Child Welfare sends children who are suspected victims of neglect or abuse to the clinic for medical review due to the accepting attitude

of the clinic toward such cases and thoroughness of the examination given. The clinic staff often works with the child's case worker to bring stability to the disruptive family environment.

To illustrate the type of work performed by the clinic in the interface with community agencies, a case history prepared by the clinic staff is attached as Appendix D. The case, although more time consuming than most, reflects the flavor of the needs of the population as well as the activity of the staff.

Objective 2. *Reduce the requirement for episodic health care through preventive services.*

- A. *Establish high immunization levels for DPT, oral polio, measles and rubella. The ultimate goal is 100% complete immunization status for all children. The concurrent goal for the year is a 25% improvement in immunization status, raising levels to 60% complete.*

About 36% of the children with immunization records are current at the time of their original screen. The clinic brings the proportion of these children current to 73%.

Less than half of the children have records of immunizations they have received in the past. The clinic requests the missing records from the appropriate agencies, and the records obtained are kept on file for use when the child returns to the clinic.

- B. *Increase the level of health knowledge of mothers and other care-takers by establishing programs and implementing training in those areas found to require education.*

Classes have been held in child growth and development, nutrition, obesity, and accidents and poisoning. The classes are small and have reached less than 100 mothers. Attempts at evaluation of the effects of these classes were not productive due to the difficulty in obtaining the cooperation of the mothers on the pre- and post-tests.

Objective 3. *Develop various methods of outreach, explore the quality of outreach contacts, and determine the success of various outreach modalities for increasing effectiveness of BCCHCC services.*

- A. *For each alternative method of outreach, successful measures include:*
1. *Minimizing the cost per contact*
 2. *Minimizing the cost per child screened*
 3. *Maximizing acceptability to client population*
 4. *Maximizing show rate for initial appointments*

Very little experimentation in outreach was attempted. The use of community aides was the only workable solution given the lack of a list of eligibles to be contacted. An incentive payment plan whereby aides were paid \$3 per child brought for screening (over and above the 12 children per week quota) was successful in stimulating those aides who were already successful in performing more contacts and getting more children screened. In documenting the time spent in outreach activity by aides, rate of contact attempts, contacts, etc., wide differences in aide performance were discovered and have led the clinic to carefully monitor each aide's performance.

- B. *Determine the positive aspects of the Barrio Clinic program and discover how each of these aspects has served as an incentive for client participation in screening.*

A client attitude survey was conducted with findings that clients' response to the clinic is due to the aides' explanation of clinic services: the availability of treatment, immunizations, transportation, and a thorough physical exam. A large majority were highly satisfied with the clinic.

Objective 4. *Serve as a model for EPSDT implementation which can provide knowledge and insight useful to future local and national program policies and procedures.*

The clinic has served as a model and has provided useful input to local and national policies--including estimates of costs, need for community aides, and the need for transportation.

- A. *Modify existing data structures and collection technique to become compatible with the "common data base" used in all demonstration projects.*

The clinic modified its record system in accordance with the requirements

of the common data base.

B. Continue to collect and refine data for determining cost-effectiveness studies for the services provided by the clinic.

The clinic has continued to provide data concerning costs of its activities.

C. Maintain a setting congenial with the purposes of a demonstration project, offering a laboratory for research and evaluation efforts.

The clinic has made a clear effort to cooperate in research and evaluation efforts and has been very flexible in allowing changes in record systems, providing information about families when reviewing samples of records, recording case-monitoring outcomes, keeping records current and adjusting to changing research needs.

The collection of data is difficult when it interferes with the delivery of the services it is intended to document, and data collection is not inherently rewarding in the face of unfulfilled needs of the clients. A sensitivity to the conflict data collection poses to the staff is required and it is necessary to provide both a staff member to oversee data collection and encouragement from supervisory personnel in order to ease these conflicts.

Conclusion

The Barrio Clinic's major objective of implementing and maintaining a low cost approach to the delivery of EPSDT services was substantially achieved.

Corrective action or greater funding are required for the provision of periodic screens, the dental program, the case-monitoring system, health education, and a more systematic approach to case-finding efforts.

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

The Barrio Clinic was funded for two major purposes--to demonstrate a way of delivering EPSDT services and to deliver comprehensive pediatric care in a low income neighborhood.

Based on the literature of the delivery of health care to the poor, it has done many things right--community aides for outreach, clinic bus for transportation, a good records system, worked closely with an evaluation team, community input through an advisory board composed of community agency representatives, location in a permanent site close to the geographic location of the target population, provided treatment on site, offered hours convenient to clients including one evening clinic, immunizing on site, and attempting to get children with a language and learning problem into care. The results have been phenomenal. The clinic screens over 250 children per month and conducts 242 sick visits per month (20% treated by a nurse on the basis of standing orders). Immunizations have been provided to raise the immunization status of children with records to 73% current (from a starting point of 35-40% current). Nearly 50% of the problems were treated on site. These services were provided for fully allocated costs of \$66 per screen.

The only weak points were the lack of vigorous case monitoring for problem resolution (while some case-monitoring activity was reported for 65% of the problems, only 20% of the problems were known to be resolved) and little emphasis on periodic screening. Case monitoring and periodic screening were not stressed due to a lack of sufficient funding combined with an attempt to generate a high volume of screening activity, and to create the Barrio Special

School--for language and learning problems. Dental care has not been brought to a significant number of children. Moves are underway to correct these problems.

Recommendations to the Barrio Clinic

The evaluation team recommends that the Barrio Clinic:

1. Move to improve the sensitivity and selectivity of screening. This would include:

--improving the facility and equipment used and reducing the noise level associated with hearing and vision tests.

--using a dental hygienist to conduct the dental screen.

--reevaluating the normal ranges for the urinalysis and hematocrit procedures.

--establishing quality control procedures to reduce differences in rates of abnormalities detected by different screeners.

2. Conduct health education in a quiet location, without children present, and apart from the screening activity.

3. More carefully monitor the performance of the community aides and establish a case-finding procedure which systematically covers the target area.

4. Seek funding for full-time case monitors and set explicit priorities for problems to be followed based upon seriousness or some other criteria so that a backlog of follow-up activity does not build.

5. Actively seek out children due for periodic screens.

Implications for National Policy

1. Where the traditional programs are not able to penetrate the target population, consideration should be given to awarding contracts to entities such as the Barrio Clinic on a dollar per child screened basis, with sufficient advance payment to allow start-up of such an operation. This would require reporting of screening and case-monitoring activity.

2. Programs which do not use such positive program ideas such as community aides, aggressively provided transportation, permanent sites, treatment clinics under the same roof, etc. should be given financial incentives to do so.

3. An adequate EPSDT program of the type implemented at the Barrio Clinic would cost about \$83.00 per child screened. Diagnosis and treatment referred to outside providers might cost an additional \$13.00 per child screened, bringing total costs per child screened to nearly \$100.00. These costs are approximately equal to and support the estimate of \$107.00 minimum EPSDT costs per child screened recommended elsewhere¹², but additional services (sick visits, on site diagnosis and treatment) are provided.

4. Medicaid and non-medicaid low income children have nearly equal need for the clinic services in the Barrio census tracts. The need for extending EPSDT to all low income children needs to be considered.

5. Demonstration projects should be funded adequately for records clerks, immunization records personnel, and a tickler file system to allow for the tracking of problems.

6. Programs using outreach personnel should be encouraged to monitor the effectiveness of each aide with a view to establishing a profile of required characteristics and skills.

7. Even in a facility which emphasizes comprehensive care, case monitoring is not a spontaneously occurring function and gets low priority. National policy should provide incentives and assistance to support case monitoring.

8. Since rates of findings vary across screeners, standards need to be described by programs to ensure comparability of results.

¹² "EPSDT Demonstration Projects: An Interim Evaluation, April, 1974 - March, 1975. Available from HSRI.

APPENDIX A. SCREENING PROCEDURES, TESTS
AND ABNORMAL VALUES AT THE BARRIO CLINIC

<u>Procedure</u>	<u>Test or Instrument</u>	<u>Abnormal Values</u>
Measurements	Height Weight	Children's Medical Center Charts
Hematocrit	Hematocrit	33 or below
Differential blood count	Basophil Eosinophil Monocytes Neutrophil Lymphocytes	3-4 per 100 white cells Over 8 per 100 white cells Over 10 per 100 white cells Over 60 per 100 white cells Over 60 per 100 white cells
Urinalysis	Bili-Labstix	ph \geq 7, presence of protein, glucose ketones, bilirubin, or blood.
Tuberculosis	Tine	swelling \geq 2mm
Hearing	VASC audiometer	19 decibels or more
Vision	E chart	20/50 preschool 20/40 school age
Developmental	Denver Developmental Test or Wide Range Achieve- ment Test	Published norms Reading below grade level

APPENDIX B. PROBLEM CATEGORIES AND DEFINITIONS

<u>Problem Category</u>	<u>ICDA¹³ Range Included</u>
Infective and Parasitic Diseases, Influenza	000-008, 010-027, 030-033, 035-046, 050-057, 060-068, 071-104, 110-117, 120-126, 128-136, 470-474
Pinworms	127
Neoplasms	140-163, 170-174, 180-228, 230-239
Diseases of Thyroid and other Endocrine Glands	240-246, 251-258
Diabetes	250
Nutritional and Metabolic Conditions	260-269.8, 270-276, 278-279
Measurements	277, 296.9, 793.8
Anemias and other Diseases of the Blood and Blood-forming Organs	280-289
Psychoses, Neuroses, Personality and other Mental Disorders	290-305, 307-309
Speech Disorder	306
Mental Retardation	310-315

¹³ ICDA codes for conditions are given in Eighth Revision International Classification of Diseases. Department of Health, Education and Welfare, Public Health Service (publication number 1693). Washington, D.C. 1968.

<u>Problem Category</u>	<u>ICDA Range Included</u>
Diseases of the Nervous System	320-324, 330-333, 340-344, 346-358
Convulsive Disorders	345, 780
Vision Problems: Refractive Errors and Blindness	370, 379
Eye Problems, Diseases	360-369, 371-378
Otitis Media and other Ear Problems	380-387
Hearing Loss	388, 389
Rheumatic Fever and Rheumatic Heart Disease	390-398
Other Heart and Circulatory Conditions	400-404, 410-414, 420-438, 440-448, 450-458
Upper Respiratory Tract Diseases	034, 460-466, 500-506, 508
Lower Respiratory Tract Diseases	480-486, 490-492, 510-519
Allergies	507, 493, 692
Dental Caries	521
Other Dental and Oral Problems	520, 522-529
Upper G.I. Tract	530-537
Lower G.I. Tract and Intestinal Problems	009, 560-564

<u>Problem Category</u>	<u>ICDA Range Included</u>
Lower G.I. Tract: Other	070, 540-543, 565-577
Hernias	550-553
Genitourinary Conditions	580-584, 590-607
Menstrual and Reproductive Conditions; Abortion	610-616, 620-629, 640-645
Pregnancy, Delivery and Puerperium	630-639, 650-662, 670-678
Dermatological Problems	680-686, 690-691, 693-698, 700-709
Orthopedic Problems	710-718, 720-738
Congenital Anomalies	740-759
Certain Causes of Perinatal Morbidity and Mortality	760-779
Symptoms and ill-defined Diseases	781-785, 787-793.7, 793.9- 796
Enuresis	786
Injuries	800-848, 850-854, 860-887, 890-897, 900-907, 910-918, 920-999
Other	Residual and uncodable

APPENDIX C. LISTING OF SOME OF THE PROBLEMS ON FILE AT THE BARRIO CLINIC

Infective and Parasitic DiseasesInfluenza

Athlete's foot
 Fungus
 Head lice
 Herpangina
 Herpetic stomatitis
 Influenza
 Intestinal parasites
 Lice
 Monilial diaper rash
 Moniliasis, oral
 Monilial rash
 Mites
 Mumps
 Pediculosis
 Roseola
 Ringworm
 Scabies
 Tapeworm
 Thrush
 Tinea Capitis
 Possible TB
 Viral Gastroenteritis
 Viral Stomatitis

Pinworms

Oxyuriasis
 Parasitosis
 Pinworms

Neoplasms

Hemangioma
 Nevus of labia
 Nevus of lip

Diseases of Thyroid and
Other Endocrine Glands

Thyroid enlargement

Nutritional and Metabolic Conditions

Carotinemia
 Failure to thrive
 Malnourished

Measurements

Abnormal measurement
 Developmental retardation
 Obesity
 Short stature
 Underweight

Anemia and other Diseases of
the Blood and Blood-Forming
Organs

Anemia
 Eosinophilia
 Abnormal differential
 Abnormal hematocrit

Psychoses, Neuroses, Personality
and Other Mental Disorders

Adolescent adjustment
 Behavior disorder
 Breath holder
 Complex psychological
 Developmental delay
 Emotional immaturity
 Hyperactive
 Hyperkinesis
 Learning disorder
 Nervousness
 Pica
 Sexual identity problem
 Slow learner
 Tantrums

Speech Disorder

Delayed speech
 Speech impediment
 Stuttering

Mental Retardation

Mental Retardation

Diseases of the Nervous System

Bell's Palsy
Cerebral palsy
Meningitis
Muscular dystrophy
Spasticity

Convulsive Disorders

Convulsive disorder
Epilepsy
Febrile seizures

Vision Problems: Refractive Errors and Blindness

Failed vision
Irreversible eye change
Myopia
Refraction problem
Vision loss

Eye Problems, Diseases

Cataract
Conjunctivitis
Dry eyes
Edema
Esotropia
Exophthalmia
Glaucoma
Heterochromic iris
Lazy eye
Obstructed tear duct
Opacity
Strabismus
Sty

Otitis Media and Other Ear Problems

Bulging tympanic membrane
Draining ear
Dull tympanic membrane
Foreign body
Impacted wax
Otitis
Perforated tympanic membrane
Purulent otitis media
Retracted tympanic membrane
Scarred tympanic membrane

Hearing Loss

Congenital deafness
Deafness
Failed hearing
Hearing loss

Rheumatic Fever and Rheumatic Heart Disease

Heart murmur
Systolic ejection

Other Heart and Circulatory Conditions

Aortic stenosis
Cardiac abnormality
Congenital heart disease
Deformed left auricle
Functional murmur
Grade systolic murmur
Grade II systolic murmur
Heart murmur
Paroxysmal atrial tachycardia
Systolic murmur
Tachycardia

Upper Respiratory Tract Diseases

Acute tonsillitis
Atrophic tonsillitis
Hypertrophic tonsils
Nasal congestion
Pharyngitis
Rhinorrhea
Scarlatina
Sinusitis
Strep throat
Upper respiratory infection

Lower Respiratory Tract Diseases

Bronchitis
Bronchopneumonia

Allergies

Allergies
Allergic rhinitis
Asthma
Food allergy
Milk allergy
Photosensitivity

Dental Caries

Caries
Caries with abscess
Bleeding caries
Tooth erosion

Other Dental and Oral Problems

Abnormal bite
Abscess
Cheilosis
Dental crowding
Gingival hyperplasia
Gingivitis
Malocclusion
Swelling gums

Upper G.I. Tract

Duodenitis
Gastroenteritis

Lower G. I. Tract

Bowel syndrome
Constipation
Diarrhea
Enteritis
Fecal impaction
Fecal incontinence

Lower G.I. Tract: Other

Anal fissure
Appendicitis
Hepatitis
Perirectal abscess
Rectal bleeding

Hernias

Hernia, inguinal
Hernia, umbilical

Genitourinary Conditions

Abnormal urinalysis
G.U. tract infection
Hydrocele
Kidney disease
Nephrosis
Phimosis
Tight prepuce

Menstrual and Reproductive Conditions:
Abortion

Breast hypertrophy
Enlarged uterus
Follicular cyst
Genital discharge
Vaginal discharge
Vulvovaginitis

Dermatological Problems

Acne
Abscess
Adenitis
Atopic dermatitis
Boils
Cafe au lait spots
Cellulitis
Cervical nodes
Contact dermatitis
Cradle cap
Dandruff
Depigmentation
Dermatitis
Diaper rash
Eczema

Dermatological Problems (Contd)

Headsores
 Impetigo
 Intertrigo
 Lymphadenitis, acute
 Papular rash
 Pyoderma
 Scarring
 Seborrhea
 Skin lesions
 Sores
 Strep rash
 Umbilical granuloma
 Viral rash, acute
 Vitiligo exanthema

Orthopedic Problems

Bony overgrowth, foot
 Bow-legged
 Collagen disease
 Femoral anteversion
 Hydrarthrosis
 Kyphosis
 Left hip limp
 Muscle atrophy
 Pigeon toe
 Recurring migratory arthritis
 Scoliosis
 Tibial torsion
 Toeing in

Congenital Anomalies

Abnormal thumbs
 Aperts syndrome
 Bilateral equinovarus
 Bone anomalies
 Chromosomal abnormalities
 Cleft palate
 Chest deformity
 Down's syndrome
 Flat feet
 Foot deformity
 Four toes each foot
 Hydrocephalus
 Metatarsus varus
 Mild deformity

Mongolism
 Muscle disease
 Pierre Robin syndrome
 Pigeon chest
 Pyloric stenosis
 Spina bifida
 Thyroglossal duct cyst
 Turner's syndrome
 Undescended testicle

Certain Causes of Perinatal Morbidity and Mortality

Bilateral cephalohematoma
 Prematurity

Symptoms and Ill-defined Diseases

Abdominal pain
 Absence of toenail
 Aphonia
 Asthenia
 Cephalgia
 Cervical nodes
 Chronic encopresis
 Colic
 Cough
 Glycosuria
 Hyperemia
 Hyperbilirubinemia
 Ketonuria
 Nervousness
 Nose bleeds
 Nystagmus
 Ophthalmology
 Poor head control
 Poor weight gain
 Proteinuria
 Rales
 Rash

Enuresis and Dysuria

Dysuria
 Enuresis
 Fluid retention

Injuries

Abrasions
Bee sting
Broken tooth
Bruise
Burn
Child abuse
Dog bite
Emotionally deprived
Foreign body in ear
Fracture
Fracture, arm
Infected insect bites
Laceration
Milk intolerance
Neglect
Penicillin allergy
Possible lead intoxication

Other

Failed Denver

APPENDIX D. CASE HISTORY¹⁴

This is a migrant family of eight (8) children and both parents, living in substandard housing and chronically unemployed. The father has a 1st grade education and is 54 years old. The mother is 32 years old. Neither parent read, write or speak English. Only the mother reads and writes Spanish.

The first child screened by this Project, on September 1973, was the 3 year old. This child was the only one brought in by the mother. He was the baby at the time, and the only one who did not go to school. On screening, he was found to be a handsome, happy, chubby 3 year old, (BCCHCC #1266-01), slightly anemic with a severe speech delay. He did not comprehend the vision test, the hearing test and was unimmunized. He passed the Personal Social, Fine and Gross Motor tests - failed the language. Before any further testing could be completed, and appointments given, the family took off into the Migrant Stream, and when they returned they were no longer at the previous address.

Approximately a year later, (child is now 4), the mother brought him in for a "peculiar foul odor in the nose". Was found to have a foreign object in the nose, removed and aggressively the nurses did all the rest of the follow-up, that was needed.

Three other children were also scheduled for screening, in November. The 11, 9 and 8 year olds.

The 4 year old, was placed in the Barrio Special School for observation. He was then referred to ENT clinic and Speech and Hearing, for testing with an Impedence Bridge. Results were: "Has limited vocabulary, pure tone results revealed a severe to profound hearing loss bilaterally". Project referred him to:

- A. Crippled Children, for hearing aid
- B. Mrs. Vasys at Trinity University was contacted to provide Home Training for his mother.
- C. Was also referred to the Bexar County School for the Deaf. The mother missed the first appointment, because it was sent via letter in English.
- D. Staff provided transportation for her next appointment, to the Bexar County School for the Deaf and assisted her in filling out the applications and arranging transportation for the child. The school was asked to write letters in Spanish to the mother, for further appointments.

¹⁴ An unedited case history (names deleted) from the clinic files.

The child was accepted into the school, as of January 2nd. The mother is an extremely cooperative woman, and more than willing to follow through. This child also had to have his tonsils removed, this year. He is now gaining vocabulary very rapidly, and appears to be very bright and eager to learn.

Older Siblings Referrals

The 10 year old was also found to have hearing loss, but has had Ear Surgery, at Bexar County Hospital. "He is placed in Special Education, because of lack of school attendance and because he cannot learn. He is scheduled for Psychological testing and evaluation by the Area III Learning Center. Has had a hearing and speech evaluation done by them. He is in the 4th grade". This was a report given to the Project by the school.

The 9 year old, is also in a Resource Class. He has a "Learning or Language Disability because he is High Risk", according to school counselor. Physical findings were normal. He is in the 2nd grade.

The 11 year old was found to be essentially normal. He is in the 5th grade.

Records on the 9 year old, (BCCHCC #1266-04), have been misplaced, both at the Area I Learning Center and also at the Robert B. Green Hospital.

A new hearing evaluation was requested by BCCHCC at Bexar County Hospital and was done on January 21, 1975. The results are, as follows:

The child has a definite hearing loss not related with previous infection, or ear surgery. He will be evaluated every six months, for any changes in hearing. The therapist recommended that further testing in Language be done, at the Area I Learning Center. If he scores low, she recommends a hearing aid for him at this time.

The counselor also reported that the 11 and 8 year old boys have not had any testing, but were placed in special classes, because they are high risk students, due to their migrant labor history.

There is a history of a hearing loss in the oldest female sibling. This was found to be minimal, she did not need amplification.

An appointment was obtained for the 9, (BCCHCC #1266-04), and the 10 year old (BCCHCC #1266-02) boys, for complete hearing evaluation on February 5, 1975, at the Bexar County Hospital.

Their names were submitted to the Barrio Special School Educo-Therapy Program.

The 10 year old was found to have a hearing loss, severe enough to warrant an appliance. The mother is now in the process of obtaining one for him. This

child is enrolled in the Barrio School in the Educo-Therapy Program. His scores were, as follows:

He was administered The Wide Range Achievement Test, on June 4, 1975. He was in the 4th grade and his academic functioning was at 2nd grade level, after 20 hours of therapy on:

Basic Phonics
Sight Vocabulary
Oral Reading

He was retested and scored at the 3.1 grade level.

His brother, the 9 year old, was also enrolled in the Educo-Therapy Program. His WRAT score given, on April 8, 1975, showed that he was functioning at the 1.5 grade level, although placed in the 3rd grade. After 40 hours of therapy, with emphasis on letter identification, phonics and sight words, he was again tested and he is now functioning at 3.6 grade level. This child, when evaluated by the school, was placed in a Special Education program, because "he can't learn"?

These two boys will continue attending the Educo-Therapy Program after school, until they are both functioning at least 1 or 2 years above grade level, to insure that they do not again fall behind.

Work with Parents

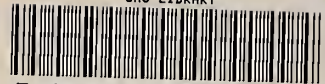
A referral to the Migrant Training Program has been made, to see if the father can be trained by them. If he can stay in San Antonio, the deaf child can continue attending the Bexar County School for the deaf, on a continuing basis.

If he cannot find work here, the entire family will have to again join the Migrant Stream and the children will have to be removed from school.

The Migrant Training Program was not able to offer the father much, in the way of training, due to the fact that he has a chronic health condition, which prevented him from undergoing training. Soon after that, he was hospitalized with a severe nervous condition.

This placed a tremendous burden on the mother, who had to become the family breadwinner. The Migrant Training Program offered to train her, as an upholsterer. She is now able to work and the entire family has been placed on Medicaid, which has helped them with their medical bills. They were also placed on Food Stamps. The children have not had to leave school this year, although the father continues to be ill and unable to work, the mother is able to support the family on what she earns.

CMS LIBRARY



3 8095 00014781 5